

Carpenter Pyrowear® 53 Tool Steel, Core Tensile Properties

Category : Metal , Ferrous Metal , Tool Steel , Oil-Hardening Steel

Material Notes:

Data provided by Carpenter Technology Corporation. This is a carburizing steel possessing good temper resistance and high case hot hardness while maintaining high core impact strength and fracture toughness. This alloy has been used in gears where temperature resistance is important. Pyrowear® is a registered trademark of Carpenter Technology Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carpenter-Pyrowear-53-Tool-Steel-Core-Tensile-Properties.php

Physical Properties	Metric	English	Comments
Density	7.80 g/cc	0.282 lb/in ³	Estimated by MatWeb

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	334	334	Estimated from Rockwell C for 3000 kg load, 10 mm ball Brinell measurement.
Hardness, Knoop	363	363	Estimated from Rockwell C
Hardness, Rockwell C	36	36	
Hardness, Vickers	349	349	Estimated from Rockwell C
Tensile Strength, Ultimate	1172 MPa	170000 psi	
	1207 MPa	175100 psi	
	@Temperature 177 °C	@Temperature 351 °F	
	1331 MPa	193000 psi	
	@Temperature -54.0 °C	@Temperature -65.2 °F	
Tensile Strength, Yield	965 MPa	140000 psi	Offset not given
	896 MPa	130000 psi	Offset not given
	@Temperature 177 °C	@Temperature 351 °F	
	1103 MPa	160000 psi	Offset not given
	@Temperature -54.0 °C	@Temperature -65.2 °F	
Elongation at Break	16 %	16 %	
	12 %	12 %	
	@Temperature 177 °C	@Temperature 351 °F	
	18 %	18 %	

Mechanical Properties	@Temperature -54.0 °C Metric	@Temperature -65.2 °F English	Comments
Reduction of Area	66.5 %	66.5 %	
	46 %	46 %	
	@Temperature 177 °C	@Temperature 351 °F	
	63 %	63 %	
	@Temperature -54.0 °C	@Temperature -65.2 °F	
Fracture Toughness	130 MPa-m ^{1/2}	118 ksi-in ^{1/2}	K(Q)
Charpy Impact	130 J	95.9 ft-lb	V-notch
	55.0 J	40.6 ft-lb	V-notch
	@Temperature -54.0 °C	@Temperature -65.2 °F	
	155 J	114 ft-lb	V-notch
	@Temperature 177 °C	@Temperature 351 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	11.26 µm/m-°C	6.256 µin/in-°F	
	@Temperature 24.0 - 93.0 °C	@Temperature 75.2 - 199 °F	
	12.06 µm/m-°C	6.700 µin/in-°F	
	@Temperature 24.0 - 260 °C	@Temperature 75.2 - 500 °F	
	13.05 µm/m-°C	7.250 µin/in-°F	
	@Temperature 24.0 - 538 °C	@Temperature 75.2 - 1000 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.10 %	0.10 %	
Chromium, Cr	1.0 %	1.0 %	
Copper, Cu	2.0 %	2.0 %	
Iron, Fe	89.5 %	89.5 %	as remainder
Manganese, Mn	0.35 %	0.35 %	
Molybdenum, Mo	3.25 %	3.25 %	
Nickel, Ni	2.0 %	2.0 %	

Silicon Si Component Elements Properties		1.0 % Metric	1.0 % English	Comments
Vanadium, V		0.10 %	0.10 %	

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com
Email : sales@lookpolymers.com
Tel : +86 021-51131842
Mobile : +86 13061808058
Skype : lookpolymers
Address : United North Road 215,Fengxian District, Shanghai City,China